Abstract ID : 6

Title : Classification of Weddell Seal Dives Based on Three-Dimensional Movements and Video Recorded Observations

Category : Behavior

Student :

Preferred Format : Oral Presentation

Abstract : We classified Weddell seal (Leptonychotes weddellii) dives based on 58 spatial and temporal variables derived from three-dimensional movements and assigned functions to the dive classifications based on video recorded behavior. The variables were measured or calculated from data obtained by attaching a video and data recorder to the backs of 10 adult Weddell seals diving from an isolated ice hole in McMurdo Sound, Antarctica. Our analysis revealed four types of dives. Type 1 dives were intermediate in duration (15.0 ± 4.2 min), deep (mean maximum depth = 378 ± 93 m) and had the steepest descent and ascent angles. Video recordings of the seals capturing prey, primarily small Antarctic silverfish (Pleuragramma antarcticum), confirmed these were foraging dives. Types 2, 3 and 4 dives formed a continuum from very short, low speed, non-linear dives that were close to the hole (Type 2) to progressively longer, higher speed, very linear dives that ranged as much as 3 km from the hole (Type 4) but remained relatively shallow (< 142 m) compared to Type 1 (foraging) dives. Type 2 dives were hypothesized to be related to hole-guarding behavior or the detection of other seals. Type 3 and 4 dives had characteristics suggestive of exploratory behavior. Comparisons with previously published dive classifications that were based on time-depth records showed that some functions attributed to certain dive types by previous researchers were correct, but others were not. This emphasizes the need for behavioral data for correct interpretation of dive profiles and time-depth statistics.